Cambs 65/92

AGRICULTURAL LAND CLASSIFICATION AND SOIL PHYSICAL CHARACTERISTICS

LANGWOOD FARM SOUTH, MEPAL, CAMBRIDGESHIRE

1. INTRODUCTION

1.1 The site is the subject of an application by Amey Roadstone Corporation Ltd, for the extraction of gravel at Langwood Farm South, Mepal, Cambridgeshire. This report provides detailed information on agricultural land quality and soil physical characteristics for this 196.5 hectare site. Adjacent sites had been surveyed, however, none overlapped. The site survey was carried out in August 1992, using a hand held 120 cm Dutch soil auger. In addition, five pits were dug to assess subsoil conditions.

1.2 On the published 1:63,360 scale Provisional ALC map sheet 135 (MAFF 1971), the site is mapped as grade 2 land. Since the map is of a reconnaissance nature, primarily designed for strategic planning purposes, the current survey was undertaken to provide more detailed information on land quality for the site.

2. SITE PHYSICAL CHARACTERISTICS

Climate

2.1 Climate data for the site was obtained from the published agricultural climatic dataset (Met. Office 1989). This indicates that the site has an average annual rainfall of 541 mm (21.6"). This also indicates that the soils are at field capacity for a period of 88 days and that moisture deficits are 118 mm for wheat and 114 mm for potatoes. Median accumulated temperature above 0°C January to June (ATO) is 1457 Day °C.

2.2 These climatic characteristics do not impose any limitation to the ALC grading of the site.

Altitude and Relief

2.3 The site comprises almost level land at 2 m AOD. Altitude and relief do not constitute limitations to the ALC grading of the land.

Irrigation

2.4 Although irrigation is used sporadically, the source and quantity do not appear to be reliable, thus irrigation has not been taken into account when grading the land.

3. AGRICULTURAL LAND CLASSIFICATION

3.1 The site has been graded as predominantly grade 2, with a very small area of grade 1, and a lagoon area mapped as non-agricultural. A precise breakdown of the ALC grades in hectares and percentage terms is provided below. The definition of the ALC grades is given in Appendix 1.

AGRICULTURAL LAND CLASSIFICATION

Grade	Hectares	Percentage
1	0.5	0.3
2	180.5	91.8
Agricultural Buildings	0.7	0.4
Non-Agricultural	14.8	7.5
TOTAL	196.5	100.0

Grade 1

3.2 A small pocket in the south-west of the site has been graded 1 where deeper profiles over gravel outcrop, this joins a larger area to the south. Soils typically comprise organic clay loam topsoils over clay loam subsoils, which merge into a gravel horizon below 80 cm. These profiles hold high reserves of available water for crop growth, consequently the land has been mapped as grade 1 (excellent quality agricultural land).

Grade 2

3.3 Over the remainder of the site, similar but slightly shallower profiles over gravel have been graded 2. The soils are fully described in paragraph 4.3. The land is subject to minor droughtiness limitations due to the presence of small amounts of profile stone and the presence of gravel, typically 70 cms+. These factors combine to slightly reduce the available water for crop growth, thus the land has been graded 2.

4. SOIL PHYSICAL CHARACTERISTICS

Geology

4.1 The published 1:50,000 scale solid and drift edition geology map sheet 173 (Ely) (GSEW 1980) shows the entire site to consist of first and second terrace river gravels.

Soils

4.2 The published 1:63,360 scale soils map sheet 173 (Ely) (SSEW 1973), shows the site to comprise the humose Fordham/Clayhythe complex. The current detailed inspection broadly confirms the presence of humose soils. One main soil type has been identified.

(See also Appendix 2)

4.3 These soils cover the entire site and typically comprise very slightly stony organic clay loam topsoils over very slightly or slightly stony medium and heavy clay loams, sandy clay loams (or occasionally medium sandy loam) upper subsoils . Lower subsoil gravel layers comprise a loamy medium sand matrix with an average of 40% flints. The gravel layer is encountered typically below 70 cms depth, with smaller sporadic pockets of shallower soils found where gravel occurs within 45/60 cms depth. These shallower areas cover too small an area to delineate seperately.

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S ESCOTT
Resource Planning Team
Cambridge

Appendix 1

Grade 1 - excellent quality agricultural land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly include top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2 - very good quality agricultural land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable crops. The level of yields is generally high but may be lower or more variable than Grade 1.

Grade 3 - good to moderate quality agricultural land

Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a - good quality agricultural land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b - moderate quality agricultural land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of winter range of crops or high yields of grass which can be grazed or harvested over most of the year.

Grade 4 - poor quality agricultural land

Land with severe limitations which significantly restrict the range of crops and/or levels of yields. It is mainly suited to grass with occasional arable crops (eg. cereals and forage crops) the yield of which are variable. In most climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5 - very poor quality agricultural land

Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

Appendix 2

SOIL PHYSICAL CHARACTERISTICS

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SOIL TYPE 1 (181 ha)

Topsoil	Texture	:	organic medium clay loam
	Colour	:	very dark greyish brown (10YR3/2)
	Stone	:	very slightly stony (1-5%) small subangular flints
	Depth	:	30/35 cm
Upper Subsoil	Texture	:	medium or heavy clay loam, sandy clay loam (or occasionally medium sandy loam).
	Colour	:	light brownish grey (10YR6/2) or pale brown (10YR6/3).
	Gleying	:	mottles present, yellowish brown (10YR5/8) and strong brown (7.5YR5/6).
	Structure	:	weakly and moderately developed, coarse and very coarse subangular blocky.
	Porosity	:	0.5 to 2% reed and worm channels
	Stone	:	very slightly to slightly (2-10%) small subangular flints.
	Depth	:	typically 70 cm (range 45 to 85 cm)

Parent Material — Gravel - 40% flints in a loamy medium sand matrix encountered from a depth of 45/85 cms, typically 70 cms.

REFERENCES

GEOLOGICAL SURVEY OF GREAT BRITAIN 1980. Solid and drift edition map sheet 173 (Ely) 1:50,000.

MAFF 1971. Agricultural Land Classification Map Sheet 135, Provisional, 1:63,360.

MAFF 1988. Agricultural Land Classification of England and Wales (Revised Guidelines and Criteria for grading the quality of Agricultural Land. Alnwick).

METEOROLOGICAL OFFICE, 1989. Published climatic data extracted from the agroclimatic dataset, compiled by the Meteorological Office.

SOIL SURVEY OF ENGLAND AND WALES 1973. Soil Map Sheet 173 (Ely), 1:63,360.